

REMARKS

Claims 1-32 and 34-59 remain pending after amendment.

Specification Amendments

Applicant has amended the specification at page 10, paragraph [0040] to clarify the description of the temperature ratio signal.

Claim Amendments

Claims 31 and 44-50 are amended. Claim 33 is cancelled. New claims 58 and 59 are added. No new matter is added by this amendment.

Allowable Subject Matter

Applicants thank the Examiner for the indication of allowable subject matter of claims 4-24, 30, 40-41, 46-50 and 55. However, for the reasons indicated in detail below, all pending claims are believed to be directed to allowable subject matter.

Objection to Claims

Applicant thanks the Examiner for noting the redundant recitation in claims 45-51 of the phrase “wherein the”. In response, the claims are amended to delete the redundant wording. The objection is thus moot and should be withdrawn.

Rejection under 35 USC 112 (paragraph two)

Claims 28 and 29 stand rejected under 35 USC 112 (paragraph two) as not distinctly claiming the invention for the reason that “the flow bridge signal” in claims 28 and 29 lacks antecedent basis.

Accordingly, Applicant has made claims 28 and 29 dependent on claim 2, which first introduces the flow bridge signal.

The rejection is thus moot and should be withdrawn.

Rejection under 35 USC 102(b)

Claims 1, 25-29, 31, 33-36, 39, 42 and 43 stand rejected under 35 U.S.C. 102(b) as being anticipated by Bonne et al. (U.S. Patent 5,237,523). This rejection respectfully is traversed for the reason that applicant's claimed invention is fundamentally different from the flowmeter described by Bonne et al.

Firstly, Bonne et al. teach a flowmeter that corrects for both temperature *and composition*. As stated in col. 1, line 67 to col. 2, line 3, Bonne et al. provide a method "to correct the measured flow for changes in *both the composition* of the gas and the temperature of the gas relative to the calibration gas composition and temperature." Applicant's claimed invention does not correct for changes in gas composition; rather, it is a novel and inventive way of measuring flow while correcting for temperature, enabling accurate and precise flow rate measurements over a wide range of temperatures and flow rates.

Secondly, there are generally two types of thermal mass flowmeters. The first type measures a signal difference between the flow sensor and the temperature sensor. The second type maintains the flow sensor at a constant temperature above the temperature sensor while measuring the "bridge signal" (voltage and/or current) required to maintain this temperature difference. The Bonne flowmeter is an example of the first type of flowmeter. Bonne directly measures a value G (the "microbridge output" or "gauge signal") which is a difference between the downstream resistance and the upstream resistance and then applies different correction factors based on temperature and composition. In contrast, Applicant's claimed flowmeter is of the second type, which does not measure a difference between downstream and upstream values but rather

involves a balancing of signal ratios. The two types are fundamentally different and therefore it is respectfully submitted that Bonne et al. does not anticipate the claims of the present application.

Turning now to the claim limitations, claim 1 recites “means for providing a flow ratio signal and a temperature ratio signal”. With respect, Bonne et al. does not teach either of these two elements. Bonne et al. does not describe flow ratios or temperature ratios. Moreover, Bonne et al. does not even mention the word “ratio” anywhere in the specification. This is because (as noted above) the Bonne flowmeter is a fundamentally different type of flowmeter. It is respectfully submitted therefore that for this reason alone, Bonne et al. do not anticipate claim 1 or any of the claims depending on claim 1.

Furthermore, claim 1 also recites “means for balancing the flow ratio signal and the temperature ratio signal.” With respect, Bonne et al. simply does not teach this limitation. As noted above, Bonne describes a fundamentally different type of flowmeter, one that works on a completely different principle. Bonne’s flowmeter measures the microbridge output G and then corrects the output value for variations in temperature and composition. There is no balancing required in Bonne since a direct measurement of the bridge output is made. In fact, Bonne et al. does not even mention the words “balancing” or “balance” or “balanced” anywhere in the specification. On the other hand, Applicant’s flowmeter requires balancing of the flow ratio signal and the temperature ratio signal to maintain a desired relationship between the parameters so that a bridge signal required to maintain this relationship can be measured. Therefore, for this further reason, it is respectfully submitted that claim 1 and all of the claims depending on claim 1 are not anticipated by Bonne et al.

With respect to independent method claim 31, Applicant has amended this claim by adding the limitation of dependent claim 33 that “the step of determining respective values of the temperature calibration factor comprises a step of balancing a flow ratio signal and a temperature ratio signal at each temperature using the respective temperature

calibration factor.” Bonne et al. do not describe any balancing of signals since the Bonne flowmeter operates on a completely different principle. Since Bonne et al does not describe the balancing step, it is respectfully submitted that newly amended claim 31 now distinguishes over Bonne et al. Furthermore, as claims 34-36, 39, 42 and 43 depend on newly amended claim 31, these dependent claims are also believed to distinguish over Bonne et al. In view of the above amendment, claim 33 has now been cancelled.

The rejection is accordingly without basis and should be withdrawn.

Rejection under 35 USC 103(a)

(1) Claims 2, 3, 37 and 38 stand rejected under 35 U.S.C. 103(a) as being obvious in view of Bonne et al. (U.S. Patent 5,237,523) and Gee (U.S. Patent Application Publication 2003/0212510). This rejection respectfully is traversed.

The rejection of claims 2 and 3 is predicated on the assumption that claim 1 is anticipated by Bonne et al. As claim 1 has been shown to distinguish patentably over Bonne et al., it is therefore respectfully submitted that the assumption upon which the obviousness rejections of claims 2 and 3 is made is fallacious. In other words, for the reasons enunciated above, Bonne et al. does not teach all of the limitations of claim 1. Therefore, it is respectfully submitted that claims 2 and 3 are not obvious in view of Bonne et al. and Gee. Similarly, the rejections of claims 37 and 38 is predicated on the assumption that base claim 31 is anticipated by Bonne et al. Since claim 31 has been amended to patentably distinguish over Bonne et al., the assumption that the base claim is anticipated by Bonne et al. is no longer valid.

Accordingly, it is respectfully submitted that the obviousness rejection of claims 2, 3, 37 and 38 is without basis and should be withdrawn.

(2) Claim 32 stands rejected under 35 U.S.C. 103(a) as being obvious in view of Bonne et al. and Citron (U.S. Patent 4,807,151). This rejection respectfully is traversed.

This rejection is also based on the assumption that claim 31 is anticipated by Bonne et al. Since claim 31 has been amended to patentably distinguish over Bonne et al., the assumption upon which claim 32 is rejected is no longer valid. The rejection is thus improper and should be withdrawn.

(3) Claims 44, 45, 51, 52, 54 and 56 stand rejected under 35 U.S.C. 103(a) as being obvious in view of Bonne et al. and Gee (U.S. Pub. No. 2003/0212510). This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

In response thereto, Applicant has amended claim 44 by adding “wherein the overheat factor is a predetermined constant representing a difference in temperature across the bridge.” It is respectfully submitted that neither Bonne et al. nor Gee teaches an overheat factor that is a predetermined constant representing a difference in temperature across the bridge. As this limitation is not disclosed in either reference, it is respectfully submitted that claim 44, as well as its dependent claims, now patentably distinguishes over the prior art.

The rejection is thus without basis and should be withdrawn.

(4) Claims 53 and 57 stand rejected under 35 U.S.C. 103(a) as being obvious in view of Bonne et al., Gee and Suzuki (U.S. Patent 6,230,560). This rejection respectfully is traversed.

These claim rejections are predicated on the assumption that the combination of Gee and Bonne et al. provides all the elements of base claim 44. However, since claim 44 has now been amended to distinguish over the combination of Bonne and Gee, the assumption upon which claims 53 and 57 are rejected is no longer valid. In other words, claims 53 and 57 now contain the further limitation directed to the overheat factor which is not disclosed in Suzuki either. Therefore, it is respectfully submitted that the rejection of claims 53 and 57 is no longer valid.

The rejection is thus without basis and should be withdrawn.

Newly-Presented Claims

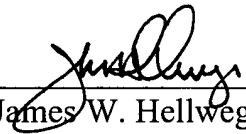
Applicant has added new claims 58 and 59, which are believed to be patentable for the reasons set forth above.

In view of the above, the application is believed to be in condition for allowance, and an early indication of same earnestly is solicited.

If any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 02-2448.

Respectfully submitted,

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